

refer to aspects of the claims that were originally presented in the application as filed, and no new matter has been introduced.

35 USC §102(b)

Claims 1, 3-6, 8, 12-13, 15-17 and 27-33 stand rejected as being anticipated by the Van Dornick reference U.S. Patent No. 3,525,604 (hereinafter "Van Dornick").

All of the claims in the present application are directed to a "glass-melting furnace," not a furnace for refining pelletized metalliferous material, as taught by Van Dornick. The Examiner asserted in the Office Action dated November 21, 2005, at page 3, that the furnace of Van Dornick is "capable of melting glass". The Examiner has failed to give patentable weight to the recitation of a "*glass-melting furnace*" in the preamble of the claims and of a "charger to supply glass-forming material" in claims 1, 27 and 29.

Use of the furnace clearly defined in Van Dornick as forming a protective slag blanket may accomplish Van Dornick's desired objectives of making a metallic product, but Van Dornick neither discloses nor suggests a *glass-melting furnace* or a glass melting furnace having a *charger to supply glass-forming material*.

The recitation of "*glass-melting furnace*," as set forth in the preamble of the claims, *should be given patentable weight*. The preamble does not merely state a *purpose or intended use* of the subject matter in the body of the claims. Instead, the preamble is necessary to *completely define the subject matter* of the invention over the prior art.

The Van Dornick reference did not address, let alone purport to solve, the problem solved by the present invention. Rather, in prior art glass-melting furnaces, the velocity of the gases was greatest above the unmelted glass forming materials, and thus enhanced the undesirable entrainment of these gaseous materials in the forming glass. This problem is solved by the present invention which recites an element (i.e., a *glass-melting furnace*) in the preamble and, in certain claims, a charger element to supply glass forming material.

The Van Dornick reference, at column 5, line 27-31, teaches combining metalliferous materials, coal, flux, binder, oxygen, carbon and alloy additives. There is no teaching or suggestion in the Van Dornick reference of a charger to supply *glass-forming material*, as recited in the present invention. Skilled glass artisans would not look to a metal refining operation where chemical reduction operations would take place, as a suitable furnace in which to melt glass.

The Van Dornick reference also teaches that a slag layer forms and protects the melted metal, and that the slag layer is removed at two different sections of the Van Dornick furnace, both the middle and the end of the furnace. There is nothing in the Van Dornick reference that would give the artisan any reason to change the Van Dornick metal refining furnace configuration to add glass-forming materials where combustion gases must be exhausted only from a downstream end of the furnace in order to melt the glass.

Contrary to the Examiner's assertions, not "all material elements recited in" claim 1 are found in the Van Dornick reference. Rather, it is the combination of the claimed elements of: a glass-melting furnace, and an exhaust in communication with a downstream end of the furnace to that combustion gases are *only* exhausted from such exhaust, which provides the inventive glass-melting furnace.

Claims 3-6, 8, 28, 30 and 32-33 depend from claims 1, 27, 29 and 31 and should be allowable for at least the same reasons as claims 1, 27, 29 and 31, as set forth above.

In addition, claim 33 recites a pressure differential between the first half of the furnace and the second half of the furnace, where pressure in the second half of the furnace is lower than pressure in the first half of the furnace. The Examiner asserted in the November 2005 Office Action, at page 3, that a pressure differential in different parts of the furnace is a method and not a structural limitation. A review of Figure 1 in the instant application also clearly shows structure (i.e., the furnace throat 29 and exhaust 60) which provides the furnace with the pressure differential. Further, the claim limitation *must be evaluated and considered* just like any other limitation of the claim.

The Examiner has not recited any reference that discloses or teaches a pressure differential between the first half of the furnace and the second half of the furnace, wherein pressure in the second half of the furnace is lower than pressure in the first half of the furnace, as recited in claim 33. In the absence of such disclosure or teaching, claim 33 should be allowable in its own right.

35 U.S.C. § 103

I. Dependent claims 2, 7, 10-11 and 18 stand rejected as being unpatentable over Van Dornick in view of Pflügl et al. U.S. Patent No. 5,925,165 (hereinafter "Pflügl"). Claims 2, 7, 10-11 and 18 depend from claims 1 and 15 and should also be allowable over Van Dornick for at least the reasons set forth above. Pflügl fails to cure the deficiencies in Van Dornick.

Neither the Van Dornick nor the Pflügl reference suggests a glass-melting furnace

having a charger to supply glass-forming material or an exhaust at only the downstream end of the furnace. The Pflügl reference describes an incinerator for refuse where slag is melted and heavy metals are separated at three different chambers within the melt furnace. In the Pflügl reference, gases are exhausted out of all three chambers. (See in Pflügl Fig. 1, arrow 15, arrow 26 and arrow 39). The Pflügl reference thus fails to address the need to prevent the "exhaust from being removed only at the downstream end of the furnace", which problem is solved by the present invention. (See paragraph 47 of instant application).

In addition, claims 7, 10-11 and 18 recite a plurality of, or at least two exhaust stacks, which when read in combination with claim 1 and 15, are positioned or located at the downstream end of the furnace. Van Dornick fails to disclose a plurality of, or at least two exhaust stacks, as set forth in the claims, but instead discloses a single exhaust stack. Pflügl fails to disclose a plurality of, or at least two exhaust stacks, which are positioned or located at the downstream end of the furnace, as set forth in the claims. Instead, Pflügl discloses two exhaust stacks positioned at the upstream end of a furnace.

There is no suggestion in Van Dornick that the stack at the downstream end could be a plurality of stacks, or in Pflügl that the stacks at the upstream end could be downstream. In the absence of such suggestion, the Examiner has failed to establish a prima facie case of obviousness. Accordingly, claims 7, 10-11 and 18 should be allowable over Van Dornick and Pflügl in their own right.

There is no teaching or suggestion in either the Van Dornick or Pflügl references to combine such different kinds of furnaces, neither of which are configured to form glass materials. The Van Dornick furnace heats materials to refine materials (and produce slag by-products). The Pflügl furnace heats and incinerates solid refuse to separate out different materials. No one skilled in the art would look to the teachings in either the Van Dornick or Pflügl references to combine a metal refining furnace with a refuse incinerator in order to provide a furnace where a homogenous product is formed by melting materials into glass.

The Examiner also argues, at page 3 of the above-referenced Office Action, that the "such a combination would provide for a more even heating of the melted material in the furnace of Van Dornick." There is no teaching in either the Van Dornick or the Pflügl reference of evenly heating the materials.

II. Claims 9 and 14 stand rejected as being unpatentable over Van Dornick in view of U.S. Patent No. 6,519,973, to Hoke (hereinafter "Hoke"). Claim 9 recited an exhaust on a

sidewall of the furnace and claim 14 recites a furnace comprising two sidewalls and two exhausts, wherein each exhaust is separated laterally from the sidewalls.

The Examiner admits that Van Dornick, as applied above against claim 12, does not disclose an exhaust that is located at a sidewall of the furnace. For this teaching, the Examiner relies on Hoke, asserting that Hoke discloses a glass melting furnace where exhausts are located at sidewalls of the furnace. However, claim 14 recites two exhausts, wherein each exhaust is separated laterally from the sidewalls. Hoke fails to disclose two exhausts, each separated laterally from the sidewalls, as set forth in claim 14. In the absence of such teaching, claim 14 should be allowable over Van Dornick and Hoke in its own right.

Non-Entry of Amendment filed January 26, 2006

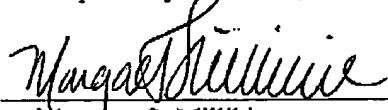
In the non-entered January Amendment, 2006, the independent claims 1, 27, 29 and 31 had merely been amended to delete the phrase "to supply" and to add the word "supplying". No new matter was being entered by the mere grammatical change of an infinitive phrase to a present participle. The independent claims were merely amended to positively recite a charger "supplying" glass-forming material to the upstream end of the furnace and/or at least one burner supplying heat to the glass-forming material at the upstream end of the furnace. No new meaning was given to the claims, nor was any new matter entered.

Though Applicants believe the claims as previously presented were distinguished over Van Dornick, either alone, or in combination with the Pflügl and Hoke, the claims as amended also clearly define over these cited references. For at least this additional reason, the claims should be allowable over at least the Van Dornick, Pflügl and Hoke references.

In view of the foregoing arguments, the claims are in condition for allowance. Favorable action is respectfully requested. If any fees are due in connection with the filing of this notice, please charge such necessary fees to Deposit Account No. 50-0568.

Respectfully submitted,

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